

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A background replacing apparatus comprising:

an image obtaining ~~section that obtains~~ means for obtaining a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

an area discriminating ~~section that discriminates~~ means for discriminating among a subject area, a background area, and a boundary area of the photographic image ~~each of the plurality of~~ in accordance with at least one of the photographic images obtained by the image obtaining ~~section~~means;

a mixing ratio determining ~~section that determines~~ means for determining a mixing ratio of a subject color to a background color in the boundary area; and

a background replacing ~~section that replaces~~ means for replacing a background of the photographic image ~~one of the~~ plurality of photographic images obtained by the image obtaining ~~section~~means with a different background in accordance with three areas of the subject area, the background area, and the boundary area, which are discriminated by the area discriminating ~~section~~means, and the mixing ratio determined by the mixing ratio determining ~~section~~means.

2. (currently amended): A background replacing apparatus according to claim 1,

wherein the area discriminating ~~section~~means discriminates among the subject area, the

background area, and the boundary area of ~~the photographic image~~each of the plurality of photographic images in accordance with a predetermined different point between the subject and the background in the photographic conditions.

3. (currently amended): A background replacing apparatus according to claim 1, wherein the area discriminating ~~section~~means discriminates ~~the photographic image~~each of the plurality of photographic images between a subject-side area and a background-side area in accordance with a predetermined different point between the subject and the background in the photographic conditions, and at least one of the subject-side area and the background-side area is reduced so as to be treated as the subject area and the background area, and an area between the subject area and the background area is treated as the boundary area.

4. (currently amended): A background replacing apparatus according to claim 1, wherein the area discriminating ~~section~~means discriminates ~~the photographic image~~each of the plurality of photographic images between a subject-side area and a background-side area in accordance with a predetermined different point between the subject and the background in the photographic conditions, and the subject-side area is reduced so as to be treated as the subject area, and an area portion excepting the subject area, of the subject-side area before reduction, is treated as whole or part of the boundary area.

5. (currently amended): A background replacing apparatus according to claim 1, wherein the area discriminating ~~section~~means discriminates ~~the photographic image~~each of the plurality of photographic images between a subject-side area and a background-side area in accordance with

a predetermined different point between the subject and the background in the photographic conditions, and the background-side area is reduced so as to be treated as the background area, and an area portion excepting the background area, of the background-side area before reduction, is treated as whole or part of the boundary area.

6. (currently amended): A background replacing apparatus according to claim 1,

wherein the area discriminating ~~section means~~ discriminates among the subject area, the background area, and the boundary area of ~~the photographic image each of the plurality of in accordance with one of the~~ photographic images obtained by the image obtaining ~~section means~~, and

the background replacing ~~section means~~ replaces a background of a photographic image, which is different from the photographic image used for discrimination of areas by the area discriminating ~~section means~~, of the photographic images obtained by the image obtaining ~~section means~~.

7. (currently amended): A background replacing apparatus according to claim 1,

wherein the mixing ratio determining ~~section means~~ presumes the subject color and the mixing ratio in the boundary area of the photographic image; and

the background replacing ~~section means~~ replaces the background of the photographic image with the different background using the subject color and the mixing ratio, which are presumed by the mixing ratio determining ~~section means~~.

8. (currently amended): A background replacing apparatus according to claim 7,

wherein the mixing ratio determining ~~seetion~~means presumes the subject color using colors in the subject area as candidates for the subject color.

9. (currently amended): A background replacing apparatus according to claim 7,

wherein the mixing ratio determining ~~seetion~~means presumes the subject color and the mixing ratio on individual points in the boundary area, and presumes the subject color on assumption that the subject color lines up on a straight line basis with the background color and a color of the associated point in a predetermined color space.

10. (currently amended): A background replacing apparatus according to claim 7,

wherein the mixing ratio determining ~~seetion~~means presumes the subject color and the mixing ratio on individual points in the boundary area, and presumes the subject color, using colors in the subject area as candidates for the subject color, in such a manner that of the candidates, a candidate, which lines up on a straight line basis with the background color and a color of the associated point in a predetermined color space, and is closest to the color of the associated point, is presumed as the subject color.

11. (currently amended): A background replacing apparatus according to claim 7,

wherein the mixing ratio determining ~~seetion~~means presumes the subject color and the mixing ratio on individual points in the boundary area, and presumes the mixing ratio in accordance with a ratio of a mutual distance among the background color, a color of the associated point, and the subject color, in a predetermined color space.

12. (currently amended): A background replacing apparatus according to claim 7, wherein the background replacing ~~section-means~~ replaces the background of the photographic image with the different background in such a manner that a color of the different background and the subject color presumed by the mixing ratio determining ~~section-means~~ are mixed at the mixing ratio presumed by the mixing ratio determining ~~section-means~~.

13. (currently amended): A background replacing apparatus according to claim 1, wherein the background replacing apparatus further comprises an image correcting ~~section~~ ~~performs correction-means for correcting~~ of the area discriminated by the area discriminating ~~section-means~~ in response to an operation, and ~~causes for causing~~ the background replacing ~~section-means~~ to perform the background replacing based on a corrected area so that a background replaced image is corrected.

14. (currently amended): A background replacing apparatus according to claim 13, wherein the area discriminating ~~section-means~~ discriminates the photographic image between a subject-side area and a background-side area in accordance with a predetermined different point between the subject and the background in the photographic conditions, and the subject-side area and the background-side area are reduced by a predetermined reduction amount so as to be treated as the subject area and the background area, and

the image correcting ~~section-means~~ alters the reduction amount on the area discriminating ~~section-means~~ in response to an operation, so that the subject area and/or the background area are corrected.

15. (currently amended): A background replacing apparatus according to claim 13, wherein the area discriminating ~~section means~~ discriminates between the subject area and the background area in accordance with a discrimination basis based on a predetermined different point between the subject and the background in the photographic conditions, and the image correcting ~~section means~~ alters the discrimination basis in response to an operation, so that the subject area and/or the background area are corrected.

16. (currently amended): A background replacing apparatus comprising:

an image obtaining ~~section that obtains means for obtaining~~ a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

an area discriminating ~~section that discriminates means for discriminating~~ a background area of ~~the photographic image each of the plurality of photographic images obtained by the image obtaining section, from other areas in each of the plurality of photographic images in accordance with at least one of the photographic images obtained by the image obtaining section;~~ a mixing state presuming ~~section that presumes means for presuming~~ a mixing ratio of a subject color ~~and to~~ a background color in ~~the other areas excepting the background area in the photographic image,~~ and the subject color; and

a background replacing ~~section that replaces means for replacing~~ a background of the photographic image ~~one of the plurality of photographic images obtained by the image obtaining section means~~ with a different background using the subject color and the mixing ratio, which are presumed by the mixing state presuming ~~section means~~.

17. (currently amended): A background replacing apparatus according to claim 16, wherein the mixing state presuming ~~seetion-means~~ presumes the subject color using colors in the subject area as candidates for the subject color.

18. (currently amended): A background replacing apparatus according to claim 16, wherein the mixing state presuming ~~seetion-means~~ presumes the subject color and the mixing ratio on individual points in other areas excepting the background area, and presumes the subject color on assumption that the subject color lines up on a straight line basis with the background color and a color of the associated point in a predetermined color space.

19. (currently amended): A background replacing apparatus according to claim 16, wherein the mixing state presuming ~~seetion-means~~ presumes the subject color and the mixing ratio on individual points in other areas excepting the background area, and presumes the subject color, using colors in other areas excepting the background area as candidates for the subject color, in such a manner that of the candidates, a candidate, which lines up on a straight line basis with the background color and a color of the associated point in a predetermined color space, and is farthest from the color of the associated point, is presumed as the subject color.

20. (currently amended): A background replacing apparatus according to claim 16, wherein the mixing state presuming ~~seetion-means~~ presumes the subject color and the mixing ratio on individual points in other areas excepting the background area, and presumes the mixing

ratio in accordance with a ratio of a mutual distance among the background color, a color of the associated point, and the subject color, in a predetermined color space.

21. (currently amended): A background replacing apparatus according to claim 16, wherein the background replacing ~~section-means~~ replaces the background of the photographic image with the different background in such a manner that a color of the different background and the subject color presumed by the mixing state presuming ~~section-means~~ are mixed at the mixing ratio presumed by the mixing state presuming ~~sectionmeans~~.

22. (currently amended): A background replacing apparatus according to claim 16, wherein the area discriminating ~~section-means~~ discriminates a background area of the photographic image from other areas in accordance with a ratio of luminous intensity among the plural photographic images.

23. (currently amended): A background replacing apparatus according to claim 16, further comprising a storage ~~section that storesmeans for storing~~ the subject color and the mixing ratio, which are presumed by the mixing state presuming ~~sectionmeans~~, wherein the background replacing ~~section-means~~ replaces a background of the photographic image obtained by the image obtaining ~~section-means~~ with a different background using the subject color and the mixing ratio, which are stored in the storage ~~sectionmeans~~.

24. (currently amended): A background replacing apparatus according to claim 16, further comprising a first parameter determining ~~section that determines-means for determining a~~

correction parameter to be used for a color correction for the subject color in accordance with an image of said other area in which a color is replaced by the subject color presumed in the mixing state presuming ~~sectionmeans~~, and

 a first color correcting ~~section that applies means for applying~~ the color correction to the subject color, which is presumed by the mixing state presuming ~~sectionmeans~~, using the correction parameter determined by the first parameter determining ~~sectionmeans~~,

 wherein the background replacing ~~section means~~ replaces the background of the photographic image obtained by the image obtaining ~~section means~~ with a different background using the subject color subjected to the color correction by the first color correcting ~~section means~~ and the mixing ratio.

25. (currently amended): A background replacing apparatus according to claim 16, further comprising a second parameter determining ~~section that determines means for determining~~ a correction parameter to be used for a color correction for the subject color in accordance with the photographic image obtained by the image obtaining ~~sectionmeans~~, and

 a second color correcting ~~section that applies means for applying~~ the color correction to the subject color, which is presumed by the mixing state presuming ~~sectionmeans~~, using the correction parameter determined by the second parameter determining ~~sectionmeans~~,

 wherein the background replacing ~~section means~~ replaces the background of the photographic image obtained by the image obtaining ~~section means~~ with a different background using the subject color subjected to the color correction by the second color correcting ~~section means~~ and the mixing ratio.

26. (currently amended): A background replacing apparatus according to claim 16, further comprising a third parameter determining ~~section that determines~~ means for determining a correction parameter to be used for a color correction for the subject color to a parameter according to an operation, and

a third color correcting ~~section that applies~~ means for applying the color correction to the subject color, which is presumed by the mixing state presuming ~~section~~means, using the correction parameter determined by the third parameter determining ~~section~~means,

wherein the background replacing ~~section~~means replaces the background of the photographic image obtained by the image obtaining ~~section~~means with a different background using the subject color subjected to the color correction by the third color correcting ~~section~~means and the mixing ratio.

27. (currently amended): A background replacing apparatus according to claim 16, further comprising a fourth parameter determining ~~section that determines~~ means for determining a correction parameter to be used for a color correction for the subject color to a parameter according to the different background, and

a fourth color correcting ~~section that applies~~ means for applying the color correction to the subject color, which is presumed by the mixing state presuming ~~section~~means, using the correction parameter determined by the fourth parameter determining ~~section~~means,

wherein the background replacing ~~section~~means replaces the background of the photographic image obtained by the image obtaining ~~section~~means with the different background using the subject color subjected to the color correction by the fourth color correcting ~~section~~means and the mixing ratio.

28. (currently amended): A background replacing apparatus according to claim 16, wherein the background replacing ~~section~~ means replaces a background of the photographic image using, as the different background, a background to which relation information representative of a relative positional relation in an image between the subject and the background is applied, and performs an replacement in such a manner that the relative relation in the background replaced image between the subject and the background is the same relative relation as the relative relation represented by the relation information.

29. (currently amended): A background replacing apparatus comprising:
an image obtaining ~~section~~ that obtains means for obtaining a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions mutually different in color of the background;

an area discriminating ~~section~~ that discriminates a means for discriminating background area of ~~the photographic image~~ each of the plurality of photographic images obtained by the imagine obtaining means, from other areas ~~in accordance with the photographic images obtained by the image obtaining section~~ in each of the plurality of photographic images;

a mixing state presuming ~~section~~ that presumes means for presuming a mixing ratio of ~~the a~~ subject color to ~~the a~~ background color in the other areas, and the subject color, ~~in other areas excepting the background area in the photographic image~~, in accordance with the plurality of photographic images; and

a background replacing ~~section~~ that replaces means for replacing a background of the photographic image one of the plurality of photographic images obtained by the image obtaining

~~section-means~~ with a different background using the subject color and the mixing ratio, which are presumed by the mixing state presuming ~~sectionmeans~~.

30. (currently amended): A background replacing apparatus according to claim 29, wherein the mixing state presuming ~~section-means~~ presumes, on assumption that the plurality of photographic images are equal to each other in terms of mixing state of the subject color and the background color, the subject color and the mixing ratio.

31. (currently amended): A background replacing apparatus according to claim 19, wherein the mixing state presuming ~~section-means~~ presumes the subject color and the mixing ratio on individual points in other area excepting the background area, determines straight lines each coupling in a predetermined color space the background color with a color of the associated point in each of the plurality of photographic images generated through photography of the common subject under a plurality of photographic conditions mutually different in color of the background, and presumes a color corresponding to an intersection of the straight lines as the subject color.

32. (currently amended): A background replacing apparatus according to claim 29, wherein the image obtaining ~~section-means~~ obtains a plurality of photographic images generated through photography of the common subject under a plurality of photographic conditions mutually different in color-phase of the background.

33. (currently amended): A background replacing apparatus according to claim 29, wherein the area discriminating ~~section means~~ discriminates between a subject area and a boundary area of other areas excepting the background area in the photographic image; and the mixing state presuming ~~section that means~~ presumes the subject color and the mixing ratio in the boundary area.

34. (currently amended): A background replacing apparatus according to claim 29, wherein the area discriminating ~~section means~~ discriminates the background area of the photographic image obtained by the image obtaining ~~section means~~ from other areas in accordance with an amount of the change in color among the plurality of photographic images.

35. (currently amended): A background replacing apparatus according to claim 29, wherein the area discriminating ~~section means~~ discriminates the background area of the photographic image obtained by the image obtaining ~~section means~~ from other areas in accordance with a difference of luminous intensity between the background and the subject.

36. (currently amended): A non-transitory computer-readable medium for storing a background replacing program that causes a computer to operate as an a background replacing apparatus, when the background replacing program is incorporated into the computer and is executed, the apparatus comprising:
an image obtaining ~~section that obtains means for obtaining~~ a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

an area discriminating ~~section that discriminates~~ means for discriminating among a subject area, a background area, and a boundary area of ~~the photographic image in accordance with the~~ ~~each of the~~ plurality of photographic images obtained by the image obtaining ~~section~~ means;

a mixing ratio determining ~~section that determines~~ means for determining a mixing ratio of a subject color to a background color in the boundary area; and

a background replacing ~~section that replaces~~ means for replacing a background of ~~the photographic image~~ ~~one of the~~ plurality of photographic images obtained by the image obtaining ~~section~~ means with a different background in accordance with three areas of the subject area, the background area, and the boundary area, which are discriminated by the area discriminating ~~section~~ means, and the mixing ratio determined by the mixing ratio determining ~~section~~ means.

37. (currently amended): A ~~non-transitory computer-readable medium for storing a~~ background replacing program that causes a computer to operate as ~~an~~ ~~a~~ background replacing apparatus, when the background replacing program is incorporated into the computer and is executed, the background replacing apparatus comprising:

an image obtaining ~~section that obtains~~ means for obtaining a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

an area discriminating ~~section that discriminates~~ means for discriminating a background area of ~~the photographic image~~ ~~each of the~~ plurality of photographic images obtained by the image obtaining means, from other areas ~~in each of the~~ plurality of photographic images in accordance with the photographic images obtained by the ~~image obtaining~~ section;

a mixing state presuming ~~section that presumes~~ means for presuming a mixing ratio of ~~the~~ a subject color and ~~to~~ the ~~a~~ background color, and the subject color, in ~~the~~ other areas excepting the background area in the photographic image, and the subject color; and

a background replacing ~~section that replaces~~ means for replacing a background of the photographic image ~~one of the plurality of photographic images~~ obtained by the image obtaining ~~section~~ means with a different background using the subject color and the mixing ratio, which are presumed by the mixing state presuming ~~section~~ means.

38. (currently amended): A non-transitory computer-readable medium for storing a background replacing program that causes a computer to operate as ~~an~~ a background replacing apparatus, when the background replacing program is incorporated into the computer and is executed, the background replacing apparatus comprising:

an image obtaining ~~section that obtains~~ means for obtaining a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions in which colors of backgrounds are different from one another;

an area discriminating ~~section that discriminates~~ means for discriminating a background area of ~~the~~ photographic image ~~each of the plurality of photographic images obtained by the~~ image obtaining means, from other areas in each of the plurality of photographic images in accordance with the photographic images obtained by the ~~image obtaining~~ section;

a mixing state presuming ~~section that presumes~~ means for presuming a mixing ratio of ~~the~~ a subject color and ~~the~~ a background color in the other areas, and the subject color, in other areas excepting the background area in the photographic image, in accordance with the plurality of photographic images; and

a background replacing ~~section that replaces~~means for replacing a background of the photographic image one of the plurality of photographic images obtained by the image obtaining ~~section~~means with a different background using the subject color and the mixing ratio, which are presumed by the mixing state presuming ~~section~~means.

39. (currently amended): A background replacing method comprising:

~~an image obtaining step that obtains~~obtaining a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

~~an area discriminating step that discriminates~~discriminating among a subject area, a background area, and a boundary area of each of the plurality of the photographic image in accordance with the photographic images obtained by the image obtaining step;

~~a mixing ratio determining step that determines~~determining a mixing ratio of a subject color to a background color in the boundary area; and

~~a background replacing step that replaces~~replacing a background of one of the plurality of photographic images ~~the photographic image obtained by the image obtaining step~~ with a different background in accordance with three areas of the subject area, the background area, and the boundary area, which are discriminated by the ~~area~~-discriminating step, and the mixing ratio determined by the ~~mixing ratio~~-determining step.

40. (currently amended): A background replacing method comprising:

~~an image obtaining step that obtainsobtaining~~ a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

~~an area discriminating step that discriminatesdiscriminating~~ a background area of each of the plurality of the photographic image from other areas in accordance with the photographic images obtained by the image obtaining step, from other areas in each of the plurality of photographic images;

~~a mixing state presuming step that presumespresuming~~ a mixing ratio of a subject color and ~~to~~ a background color, ~~and the subject color, in the other areas excepting the background area in the photographic image, and the subject color;~~ and

~~a background replacing step that replacesreplacing~~ a background of the photographic image obtained by the image obtaining step with a different background using the subject color and the mixing ratio, which are presumed by the mixing state presuming step.

41. (currently amended): A background replacing method comprising:

~~an image obtaining step that obtainsobtaining~~ a plurality of photographic images generated through photography of a common subject under a plurality of photographic conditions;

~~an area discriminating step that distinguishesdiscriminating~~ a background area of each of the photographic images obtained in the image obtaining step the photographic image from other areas in each of the plurality of photographic images ~~accordance with the photographic images obtained by the image obtaining step;~~

~~a mixing state presuming step that presumespresuming a mixing ratio of a subject color and to a background color in the other areas, and the subject color, in other areas ~~excepting the background area in the photographic image~~, in accordance with the plurality of photographic images; and~~

~~a background replacing step that replacesreplacing a background of one of the plurality of photographic image-images obtained by the image obtaining step with a different background using the subject color and the mixing ratio, which are presumed by the mixing state presuming step.~~